FlyBy Math™ Alignment
Wisconsin Model Academic Standards
Mathematics Content Standards and Performance Standards

Content Standard A. Mathematical Processes

Students in Wisconsin will draw on a broad body of mathematical knowledge and apply a variety of mathematical skills and strategies, including reasoning, oral and written communication, and the use of appropriate technology, when solving mathematical, real-world and non-routine problems.

Performance Standards	***FlyBy Math*™ Activities**
A.12.1 Use reason and logic to: • evaluate information • perceive patterns • identify relationships • formulate questions, pose problems, and make and test conjectures • pursue ideas that lead to further understanding and deeper insight	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
A.12.2 Communicate logical arguments and clearly show • why a result does or does not make sense • why the reasoning is or is not valid • an understanding of the difference between examples that support a conjecture and a proof of the conjecture	--Predict outcomes and explain results of mathematical models and experiments. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
A.12.3 Analyze non-routine* problems and arrive at solutions by various means, including models* and simulations, often starting with provisional conjectures and progressing, directly or indirectly, to a solution, justification, or counter-example	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Conduct simulation and measurement for several aircraft conflict problems. --Predict outcomes and explain results of mathematical models and experiments.
A.12.5 Organize work and present mathematical procedures and results clearly, systematically, succinctly, and correctly	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

Content Standard B - Number Operations And Relationships

Students in Wisconsin will use numbers effectively for various purposes, such as counting, measuring, estimating, and problem solving.

Performance Standards	***FlyBy Math™* Activities**
B.12.2 Compare real numbers using • ratios, proportions, percents, rates of change	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.

Content Standard C: Geometry

Students in Wisconsin will be able to use geometric concepts, relationships and procedures to interpret, represent, and solve problems.

Performance Standards	***FlyBy Math™* Activities**
C.12.2 Use geometric models* to solve mathematical and real-world problems	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

Content Standard D: Measurement

Students in Wisconsin will select and use appropriate tools (including technology) and techniques to measure things to a specified degree of accuracy. They will use measurements in problem-solving situations.

Performance Standards	***FlyBy Math™* Activities**
D.12.1 Identify, describe, and use derived attributes* (e.g., density, speed, acceleration, pressure) to represent and solve problem situations	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
D.12.2 Select and use tools with appropriate degree of precision to determine measurements directly* within specified degrees of accuracy and error (tolerance)	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
D.12.3 Determine measurements indirectly*, using • estimation • proportional reasoning, including those involving squaring and cubing (e.g., reasoning that areas of circles are proportional to the squares of their radii) • techniques of algebra, geometry, and right	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Use the distance-rate-time formula to predict and analyze aircraft conflicts.

triangle trigonometry • formulas in applications (e.g., for compound interest, distance formula)	

Content Standard F: Algebraic Relationships

Students in Wisconsin will discover, describe, and generalize simple and complex patterns and relationships. In the context of real-world problem situations, the student will use algebraic techniques to define and describe the problem to determine and justify appropriate solutions.

Performance Standards	***FlyBy Math*™ Activities**
F.12.1 Analyze and generalize patterns of change (e.g., direct and inverse variation) and numerical sequences, and then represent them with algebraic expressions and equations	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Interpret the slope of a line in the context of a distance-rate-time problem.
F.12.2 Use mathematical functions* (e.g., linear*, exponential*, quadratic*, power) in a variety of ways, including • recognizing that a variety of mathematical and real-world phenomena can be modeled* by the same type of function • translating different forms of representing them (e.g., tables, graphs, functional notation*, formulas) • describing the relationships among variable quantities in a problem • using appropriate technology to interpret properties of their graphical representations (e.g., intercepts, slopes, rates of change, changes in rates of change, maximum*, minimum*)	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.
F.12.3 Solve linear and quadratic equations, linear inequalities, and systems of linear equations and inequalities • numerically • graphically, including use of appropriate technology • symbolically, including use of the quadratic formula	--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.
F.12.4 Model and solve a variety of mathematical and real-world problems by using algebraic expressions, equations, and inequalities	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.